

Biographical Information for Sallie Keller-McNulty

Name: Sallie Keller-McNulty

Biographical Sketch. Dr. Sallie Keller-McNulty has been the Group Leader for the Statistical Sciences Group at Los Alamos National Laboratory since 1998. Prior to her move to Los Alamos, Dr. Keller-McNulty was Professor and Director of Graduate Studies at the Department of Statistics, Kansas State University. She was on the Kansas State faculty from 1985 to 1998. She spent two years, 1994-1996, as Program Director for Statistics and Probability, Division of Mathematical Sciences, at the National Science Foundation (NSF).

Dr. Keller-McNulty has over sixty statistical sciences publications. Her areas of research are uncertainty quantification; computational and graphical statistics applied to statistical databases (including complex model integration) and related software and modeling techniques; and data access and confidentiality. She has chaired the National Academy of Sciences' Committee on Applied and Theoretical Statistics and has recently served on three other National Research Council committees: the Board of Mathematical Sciences and Their Applications; National Research Council Panel reviewing NIST Information Technology Laboratory; and the Committee on National Statistics on the Research on Future Census Methods. She is currently chair of a National Academy Panel study on Modeling and Simulation for Defense Transformation.

Dr. Keller-McNulty received her Ph.D. in Statistics from Iowa State University of Science and Technology and her BS and MS in mathematics from University of South Florida. She is a Fellow of the American Statistical Association (ASA), receipt of the ASA Founders Award, and has recently been elected ASA President. She has held several other positions within the ASA, including serving on its board of directors. She is an Associate Editor of *Statistical Science* and has served as Associate Editor of the *Journal of Computational and Graphical Statistics* and the *Journal of the American Statistical Association*. She serves on the Executive Committee of the National Institute of Statistical Sciences; the Executive Committee of American Association for the Advancement of Science (AAAS) Section U, chairs the Committee of Presidents of Statistical Societies; and serves on the advisory committee for the newly founded national Statistics and Applied Mathematics Institute.

Sallie Keller-McNulty

Vitae March, 2004

Statistical Sciences Group
Los Alamos National Laboratory

EDUCATION:

Ph.D. in Statistics, July 1983
Iowa State University of Science and Technology

M.S. in Mathematics, August 1979
University of South Florida

B.S. in Mathematics, December 1977
University of South Florida

EMPLOYMENT:

Group Leader, Statistical Sciences, Los Alamos National Laboratory, July 1998-present.

Professor and Director of Graduate Studies, Department of Statistics, Kansas State University, 1996-July 1998.

Program Director, Statistics and Probability, Division of Mathematical Sciences, National Science Foundation, 1994-1996.

Associate Professor, Department of Statistics, Kansas State University, 1989-1996.

Director of Statistical Design and Analysis Unit, Institute of Social and Behavioral Research, Kansas State University, 1990-July 1998.

Adjunct Professor, Department of Computer and Information Sciences, Kansas State University, 1989-1995.

Assistant Professor, Department of Statistics, Kansas State University, 1985-1989.

Assistant Professor, Department of Mathematics, University of North Carolina at Greensboro, 1983-1985.

Research Assistant, Statistical Laboratory, Iowa State University, 1979-1983.

Teaching Assistant, Department of Mathematics, University of South Florida, 1978-1979.

PROFESSIONAL MEMBERSHIPS:

American Statistical Association (ASA)
Institute of Mathematical Statistics (IMS)
Society for Industrial and Applied Mathematics (SIAM)
American Association for the Advancement of Science (AAAS)
Sigma Xi , Phi Kappa Phi, Pi Mu Epsilon, Mu Sigma Rho

HONORS:

1992 American Statistical Association Founders Award
Fellow of the American Statistical Association
National Associate of the National Academy of Sciences
2002 American Statistical Associations Founder Award
1996 National Science Foundation Director's Award for Outstanding Program Management
1993 Kansas Academy of Sciences Lecturer
1982 Mu Sigma Rho Statistics Award, Iowa State University
1978 Pi Mu Epsilon Outstanding Scholar Award, University of South Florida

EDITORIAL SERVICE:

Associate Editor of *Statistical Science*, 2001-present.
Guest Editor of special issue of *Statistical Science* on Reliability, 2004-2005.
Associate Editor of *Journal of Computational and Graphical Statistics*, 1996-1999.
Associate Editor of *Journal of the American Statistical Association*, 1991-1994.
Journal on Computational and Graphical Statistics Management Committee, 1993-1995.
Founding Editor of the *ASA Statistical Computing and Statistical Graphics Newsletter*, 1990-1992.

SERVICE TO THE PROFESSION:

Elected American Statistical Association (ASAP President, President Elect 2005, President and Chair of the Board 2006, Past President 2007, member of executive committee throughout
Chair of National Academy of Sciences panel study on Modeling and Simulation for Defense Transformation, 2004-2006.
Member of Purdue University Statistics Department External Review Committee, 2004.
Member of the Harvard University Statistics Department External Review Committee, 2004.
Chair of the Fourth International Conference on Mathematical Methods in Reliability, 2004.
Member of the NRC/NIST Information Technology Laboratory Review Committee, chair the Statistics Engineering Division sub-committee, 2002-2004.
Member of the Carnegie Mellon University President's Advisory Panel for the Department of Statistics, 2002-present.
Member of the SIAM Science Policy Board, 2003-2006
Member of the NCAR Geostatistical Sciences Project Review Committee, 2001-2003.
Chair of Committee of Presidents of Statistical Societies, 2001-2003.
Chair of the National Academy of Sciences' Committee on Applied and Theoretical Statistics, 2001-2003, member of committee in 2000.
Member of National Academy of Sciences' Board on Mathematical Sciences and Their Applications, 2001-2003
Chair of Interface 2000: Symposium on the Interface of Statistics and Computation Sciences.
Member of the Committee on National Statistics Panel on the Research on Future Census Methodology, 1999-2003.

Member of the National Research Council's Computer Science and Technology Board
 Committee on Information Technology and Federal Services, 1998-2002.
 Executive Committee of AAAS Section U, the Statistics Section, Elected Member-at-Large,
 1999-2002
 Elected Member of the ASA Board of Directors, 1999-2001.
 Executive Committee of the National Institute of Statistical Sciences Member, 1999-2003
 ASA Presidential Appointee: 1997 Overall Program Chair for the Joint Statistical Meetings
 Committee of Presidents of Statistical Societies Presidents' Award Committee Member,
 1996-1998, Chair 1999
 Interface Foundation Board Member, 1993-1997.
 Section Chair of the ASA Statistical Computing Section, 1996.
 Program Chair of the ASA Statistical Computing Section, 1994.
 Program Chair-Elect of the ASA Statistical Graphics Section, 1994.
 Member of the ASA Committee on Meetings, 1993-98.
 Program Chair of the ASA Statistical Education Section, 1991.
 Service on NSF review panels for the Division of Mathematical Sciences.
 Committee of Presidents of Statistical Societies Lecturer.
 Referee for professional journals in Statistics, Mathematics, Computer Science, and
 Engineering.

SERVICE TO LOS ALAMOS NATIONAL LABORATORY:

Chair of the Laboratory Directed Research (LDRD) and Development Information Science
 & Technology Committee and Member of the LDRD ER Executive Committee, 2003-
 present
 Member of National Security Fellows Committee, 2003-present
 D-Division POC for Strategic Goal A, Science Based Prediction of Complex Systems, 2004
 Member of the NW Science Roadmapping Steering Committee and participant on
 subcommittees, 2004 - present
 QMU Workshop Organizing Committee and follow-on Program Development, 2004
 Member of X-Division Management Search Committee, 2003
 Member of D-Division Group and Thrust Leader searches, 2003
 Co-chaired the D/T Joint Science workshop, 2003
 Co-chaired the DOE Office of Science workshop on Predictability, 2003
 Co-chair the uncertainty quantification component of the DOE workshop on Ultra Scale
 Computing, 2003
 D-Division POC for LDRD, 2002-2003
 Member of the Center for Nonlinear Science Directory Search Committee, 2002-2003
 Member of LDRD-DR Strategy Team, 2001-2003.
 Member of MDA working group, 2001-2003.
 Member Computer and Computational Sciences Division Director Search Committee, 2001
 Co-Chair of the Decision Application Division Director Search Committee, 1999.
 Directors Office representative to the 1999 University of California Worklife Symposium.

INVITED PROFESSIONAL LECTURES:

A typically year consists of at least five requests for invited lectures or short courses at national and international conferences, workshops, and various research groups. A detailed description is available upon request. In addition, multiple routine recruiting visits to top statistical sciences research groups are made annually.

INVITED PROFESSIONAL SHORT COURSES:

Information Integration Technology, 2003. Institute of Mathematics and its Applications Special Year on Complex Systems, Minneapolis, Minnesota, (with A. Wilson).

Data, Knowledge, and Information Integration to Support Decision Making, 2002. Army Conference on Applied Statistics, Houston, Texas, (with A. Wilson, S. Reese, M. McNulty, T. Bement, M. Meyer, J. Booker).

Exploratory Data Analysis and Statistical Graphics, 1997. CDC-ATSDR Symposium on Statistical Methods in Public Health, Atlanta, Georgia, (with K. Kafadar).

REFEREED PUBLICATIONS:

Keller-McNulty, S.A., Duncan, G., Stokes, S.L., 2004, "Database Security and Confidentiality: Examining Disclosure Risk vs. Data Utility through the R-U Confidentiality Map *Management Sciences Journal*, under revision.

Keller-McNulty, S. A., Nakhleh, C., and Singpurwalla, N., 2004, "Masking Data," *International Statistics Reviews*, submitted

Keller-McNulty, S.A., Wilson, G.D., and Wilson, A.G., 2003. "Integrating Scientific Information: Reconsidering the Scientific Method as a Path to Better Policy Making," *Science Compass*, submitted.

Keller-McNulty, S. A. and Wilson, A. G., 2003. "Reliability for the 21st Century," *Mathematical and Statistical Methods in Reliability*, editors Lindqvist and Doksum, World Scientific Publisher.

T. R. Bement, J. M. Booker, S. A. Keller-McNulty, N. Singpurwalla, 2003. Testing the Untestable: Reliability in the 21st Century, *IEEE Transactions on Software Reliability*, 52:1, 118-124.

Berk, R., Bickel, P., Campbell, K., Fovell, K., Keller-McNulty, S., Kelly, E., Linn, R., Park, B., Perelson, A., Roupail, N., Sacks, J., and Schoenberg, F., 2002, Workshop on Statistical Approaches for the Evaluation of Complex Computer Models, *Statistical Sciences*, 17:173-192.

- S. Keller-McNulty and M. McNulty, 2001. "Show Me the Data: Statistical Representation," *Theoria and Historia Scientiarum*, in-press.
- National Research Council, 2000. *Information Technology Research for Crisis Management*, prepared by the CSTB Committee on Computing and Communications Research to Enable Better Use of Information Technology in Government (S. Keller-McNulty member), National Academy Press.
- National Research Council 2000. *Information Technology Research Federal Statistics*, prepared by the CSTB Committee on Computing and Communications Research to Enable Better Use of Information Technology in Government (S. Keller-McNulty member), National Academy Press.
- S. Keller-McNulty and E. A. Unger, 1998. A Remote Access Database System Prototype for the Release of Confidential Data, *Journal of Official Statistics*, 14(4):346-360.
- V. Lancaster and S. Keller-McNulty, 1998. A Review of Composite Sampling Methods, *Journal of the American Statistical Associations*, 93(443):1216-1230.
- G. Chen and S. Keller-McNulty, 1998. Estimation of Identification Disclosure Risk in Microdata, *Journal of Official Statistics*, 14(1):79-96.
- R. Becker and S. Keller-McNulty, 1996. Presentation Myths. *American Statistician*, 50(4).
- S. Keller-McNulty and E.A. Unger, 1993. Database Systems: Inferential Security. *Journal of Official Statistics*, 9(2):475-500.
- M.N. Satern and S. Keller-McNulty, 1992. Use of Position-Time Graphs to Compare Free Throw Shooting Styles of Adult Male and Female Basketball Players. *Journal of Human Movement Studies*, 22(1):13-33.
- S. Keller-McNulty, 1991. Comment: Enhancing Access to Microdata while Protecting Confidentiality: Prospects for Future. *Statistical Science*, 6(3):234-235.
- B. Harms and S. Keller-McNulty, 1991. Error-Free Solution to a Toeplitz System of Equations. *IEEE Transaction of Acoustics, Speech, and Signal Processing*, 39(5):1212-1215.
- S. Keller-McNulty, M.S. McNulty, and D. Gustafson, 1991. Stochastic Models for Software Science. *Journal of Systems and Software*, 16:59-68.
- R.M. Jaeger and S. Keller-McNulty, 1991. Procedures for Eliciting and Using Judgments of the Value of Observed Behaviors on Military Job Performance Tests. In A.K. Wigdor B.F. Green, Jr. (Eds.), *Performance assessment for the workplace: Technical issues*. Washington, DC; National Academy Press.
- E.A. Unger and S. Keller-McNulty, 1990. The Deterrent Value of Natural Change in a Statistical Database. *Proceedings of the 13th Annual National Computer Security Conference*, 16(1):59-68.

- E.A. Unger, S. Keller-McNulty, and P. Connelly, 1990. Natural Change in Dynamic Databases as a Deterrent to Compromise by Trackers. *Sixth Annual Computer Security Applications Conference*. IEEE Computer Society Press.
- S. Keller-McNulty, 1989. Statistical Computing Software Review: Graphical Aids for Stochastic Processes. *American Statistician*, 43(2):123-124.
- S. Keller-McNulty and M.S. McNulty, 1989. Response to: Resolving the Software Science Anomaly. *Journal of Systems and Software*, 10:69-73.
- M.N. Satern, S.P. Messier and S. Keller-McNulty, 1989. The Effect of Ball Size and Basket Height on the Mechanics of the Basketball Free Throw. *Journal of Human Movement Studies*, 16(3):123-138.
- S. Keller-McNulty and W.J. Kennedy, 1987. Error-Free Computation of the Moore-Penrose Inverse with Application to Linear Least Square Analysis. *Journal of Statistical Computation and Simulation*, 27:45-64.
- S. Keller-McNulty and M.S. McNulty, 1987. The Independent Pairs Assumption of Hypothesis Tests Based on Rank Correlation Coefficients. *American Statistician*, 41(1):40-41.
- S. Keller-McNulty and J.J. Higgins, 1987. Effect of Tail Weight and Outliers on Power and Type-I Error of Robust Permutation Tests for Location. *Communications in Statistics*, B16(1):17-35
- S. Keller-McNulty and W.J. Kennedy, 1986. An Error-Free Generalized Matrix Inversion and Least Squares Method Based on Bordering. *Communications in Statistics*, B15(3):769-786.
- S. Keller-McNulty and W.J. Kennedy, 1985. Error-Free Computation of a Reflexive Generalized Inverse. *Linear Algebra and Its Applications*, 67:157-167.

INVITED PAPERS, BOOKS, CHAPTERS, AND OTHER PUBLICATIONS:

- J.J. Higgins and S. Keller-McNulty, 2003/1995. *Introduction to Probability and Systems Modelling*. Duxbury Press, Boston, Massachusetts, **(second edition under revision)**
- S. Keller-McNulty, 2002. Reliability for the 21st Century, Key Note Lecture for the Third International Conference on Mathematical Methods in Reliability, Trondheim, Norway. Paper invited to appear in the conference proceedings.
- G. Duncan and S. Keller-McNulty, 2001. Bayesian insights on Disclosure Limitation: Mask or Impute? *Proceedings of ISBA 2000, International Society for Bayesian Analysis*..
- G. Duncan and S. Keller-McNulty, 1999. Risk of Statistical Confidentiality Disclosure: A Preliminary Comparison of Masked and Synthetic Data Release. Paper presented at the

National Academy of Sciences, Committee on National Statistics Workshop on Confidentiality, October 14, 1999, Washington, DC.

V. Lancaster and S. Keller-McNulty, 1998. Composite Sampling, Part II, *Environmental Testing & Analysis*, 7(5):14-17.

V. Lancaster and S. Keller-McNulty, 1998. Composite Sampling, Part I, *Environmental Testing & Analysis*, 7(4):15-19.

S. Keller-McNulty and M.S. McNulty, 1996. Statistics and Software and Software Metrics. In A. Melton (Ed.), *Software Metrics: Understanding Software Engineering*, Chapman Hall, New York.

S. Keller-McNulty and E.A. Unger, 1991. Database Systems: Inferential Security. Paper commissioned by the National Research Council, Panel on Confidentiality and Data Access.

R.M. Jeager and S. Keller-McNulty, 1985. Procedures for Eliciting and Using Judgments of the Value of Observed Behaviors on Military Job Performance Tests. Paper commissioned by the National Academy of Sciences.

SELECTED TECHNICAL REPORTS AND NON-REFEREED PROCEEDINGS:

Wilson , A. and Keller-McNulty, S. 2003. Uncertainty Quantification for Complex Engineered Systems, Los Alamos National Lab Technical Report LA-UR-03-7924, 3rd JANNAF (Joint Army Navy NASA Air Force) Modeling and Simulation Subcommittee Meeting.

M. Meyer, S. Keller-McNulty, T. Bement, J. Booker, M. McNulty, N. Singpurwalla, 2001. PREDICT , *Los Alamos National Laboratory Technical Report*, LA-UR-01-4607.

S. Keller-McNulty and G. Duncan, 2001. Disclosure-Limited Statistical Analysis for Confidential Data to Support NSF-Sponsored Digital Government Grant, *Los Alamos National Laboratory Technical Report*, LA-UR-01-1673.

A .Wilson and S. Keller-McNulty, 2001. Statistical Representations For Information Integration. *Los Alamos National Laboratory Technical Report*, LA-UR-00-48-50.

W. F. Eddy, I. M. Johnstone, J. R. Kettenring, S. Keller-McNulty, N. J. Kirkendall, G. C. McDonald, and D. Moore, 1998. Shaping Statistics for Success in the 21st Century: A Panel Discussion. *Technical Report I-98-1*, Department of Statistics, Kansas State University.

V. Lancaster and S. Keller-McNulty, 1997. The Use of Inverse Theory on an Ill-Posed Composite Sampling Problem. . *Proceedings of the 22nd Symposium on the Interface of Computer Science and Statistics*, Houston Texas.

- V. Lancaster and S. Keller-McNulty, 1996 (revised in 1997) A Review of Composite Sampling Methods. *Technical Report I-96-2*, Department of Statistics, Kansas State University
- V. Lancaster and S. Keller-McNulty, 1996. The Use of Inverse Theory in Composite Sampling Problems. *Proceedings of the Section on Statistics and the Environment, 1996 Joint Meetings*, Chicago, Illinois.
- S. Chen, R. O. Fox, and S. Keller-McNulty, 1995. Mean Field Estimation for Reactive Turbulent Flow Models. *Proceedings of the 20th Symposium on the Interface of Computer Science and Statistics*, Pittsburgh, Pennsylvania.
- V. Lancaster and S. Keller-McNulty, 1995. Evaluation of the Field X-Ray Fluorescence Spectrometer for the Quantitative Determination of Contaminant Levels in Soils at Hazardous Waste Sites. *Technical Report II-95-1*, Department of Statistics, Kansas State University.
- S. Keller-McNulty and G. Ostrouchov, 1995. Error-Free Least Squares Based on LU Factorization Applicable to Sparse Problems. *Technical Report I-95-1*, Department of Statistics, Kansas State University.
- S. Keller-McNulty, 1995. Error-Free Least Squares Based on Multiple Homomorphic Images. *Proceedings of the Statistical Computing Section for the 1994 Joint Meetings*, Toronto, Canada.
- E. Noren and S. Keller-McNulty, 1994. The Protection of Confidential Data in a Sequential Access Statistical Database. *Proceedings of the Survey Research Section of the 1993 Joint Meetings*, San Francisco, California.
- G. Chen and S. Keller-McNulty, 1994. Database Systems and Data Disclosure Limitation. *Proceeding of the Government Statistics Section of the 1993 Joint Meetings*, San Francisco, California.
- S. Keller-McNulty and M. S. McNulty, 1994. Statistics and Software Metrics. *Technical Report II-94-1*, Department of Statistics, Kansas State University.
- Y. Chen, K. Wong, and S. McNulty, 1994. Discussion of Statistical Methods in Software Metric Validation. *Proceedings of the 32nd Annual ACM Southeast Conference*.
- S. Keller-McNulty and M. McKay, 1991. Probabilistic Model of Terrain Line-of-Sight. *Technical Report*, Los Alamos National Laboratory, Los Alamos, New Mexico.
- S. Keller-McNulty, M.S. McNulty, and E.A. Unger, 1989. The Protection of Confidential Data. *Proceedings of the 21st Symposium on the Interface of Computer Science and Statistics*, Orlando, Florida.
- E.A. Unger and S. Keller-McNulty, 1988. Modeling Parallelism: An Interdisciplinary Approach. *Proceedings of the 20th Symposium on the Interface of Computer Science and Statistics*, Washington, D.C.

- S. Keller-McNulty, 1985. A Numerical Analysis Approach to the Teaching of Statistical Computing. *Proceedings of the 17th Symposium on the Interface of Computer Science and Statistics*, Lexington, Kentucky.
- S. Keller-McNulty, 1984. Error-Free Computation of the Moore-Penrose Inverse. *Proceedings of the Statistical Computing Section of the 1984 Joint Meetings*, Philadelphia, Pennsylvania.